Supporting Documentation for Safety Zone Size, IFT-safety (based on the SAFETY module in BehavePlus)

Name of Software Tool: IFT-safety

Current Version Description/Date: IFT-safety version 01-31-12

Software Code and History: The mathematical code for IFT-safety is from the Fire Behavior Software Developer Kit (FBSDK) and the BehavePlus5 xfblib.cpp and xfblib.h. IFT- SAFETY (01-31-12) implements the critical functionality found in the BehavePlus-SAFETY module. Details comparing the functionality of BehavePlus5 and equivalent tools in IFTDSS can be found in Drury et al. (2012, BehavePlus Functionality available in IFTDSS Version 1.0). Rigorous testing has been performed to verify that the mathematical output from the IFT- SAFETY module is consistent with the output from the BehavePlus5-SAFETY module. Details concerning the output evaluation between the BehavePlus-SAFETY and IFT-safety modules can be found in PDF files included in the IFTDSS online help (under **IFTDSS Compared with Other Systems > Module Test Cases**). Future versions of IFTDSS are scheduled to expand the BehavePlus functionality.

Software Developer(s) Names, Organization, and Contact Information:

- BehavePlus was developed by U.S. Forest Service, Rocky Mountain Research Station, Fire, Fuel, and Smoke Science Program. Contact information is available on: http://www.firemodels.org/index.php/behaveplus-support/behaveplus-contact-us
- IFT-safety was developed by the IFTDSS Development Team based on software libraries provided by the BehavePlus developers. The IFTDSS Development Team may be contacted using the Feedback function available on every page of IFTDSS.

Science Module Contact, Names, Organization, and Contact Information:

- Contact information for implementation of the SAFETY module in BehavePlus or the underlying scientific algorithms is available on: http://www.firemodels.org/index.php/behaveplus-support/behaveplus-contact-us
- For questions regarding IFT-safety, please contact the IFTDSS Team using the Feedback Function available on every page of IFTDSS.

Availability of the Version of Record: The latest version of the software code for IFT-safety resides with Sonoma Technology, Inc. (STI) and is being used in IFTDSS version 1.0. However, STI did not develop the scientific algorithms within the software code. The IFT-safety software module code is public domain and available from STI upon written request.

Primary Funding Sources:

- BehavePlus development and support has been funded by U.S. Forest Service, Rocky Mountain Research Station, Fire, Fuel, and Smoke Science Program; U.S. Forest Service, Fire and Aviation Management; the Joint Fire Science Program (JFSP).
- IFT-safety development was funded by JFSP.

Application Purpose (General): The IFT-safety module can be used to calculate safety zone size, which includes separation distance, zone size, and zone radius. The safety zone separation distance is the minimum distance a firefighter in protective clothing must be separated from flames to prevent radiant heat injury. The safety zone size and radius are used to calculate the area and radius of a circular safety zone just large enough to protect the specified number of personnel and heavy equipment from radiant burn injury. The IFT-safety module can be used to facilitate in decision making for several elements of a burn plan, including Elements 15 and 16 (Holding and Contingency Plans).

Application Purpose (Fuel Treatment): The IFT-safety module can be used for prescribed burn planning and to fill in specific elements of a burn plan.

User/Application Documentation:

- Documentation of BehavePlus operation and application: http://www.firemodels.org/index.php/national-systems/behaveplus

User Application Guidance:

- The IFTDSS online help includes a PDF tutorial that illustrates how to use IFTDSS to prepare a burn plan (*Preparing a Prescribed Burn Plan*).

Scientific Foundations of the Software Tool:

- Degree of validation/evaluation and availability of written results:
  No information available at this time.
- Publications describing BehavePlus and the fire models on which it is based:
  http://www.firemodels.org/index.php/behaveplus-introduction/behaveplus-publications

Training Availability:

- Training on BehavePlus can be found at:
  http://www.firemodels.org/index.php/behaveplus-support/behaveplus-training